

**installation  
and  
operating  
instructions  
for model SX-43  
radio receiver**

JULY 1947

94X180

**the hallicrafters co.**

MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.









Figure 1. Model SX-43 Radio Receiver front view







INSTALLATION AND OPERATING INSTRUCTIONS FOR  
RADIO RECEIVER MODEL SX-43  
GENERAL INFORMATION

## 1. INSTALLATION

It is recommended that, upon receipt, the carton and then the unpacked receiver be carefully examined for any damage which may have occurred during shipment. Should any damage be apparent, immediately file claim with the carrier, stating the extent of damage.

**IMPORTANT.** Unless otherwise marked, this receiver is operated from 105 to 125 volts 50-60 cycle a-c power. If in doubt call your local utility company for information.

Connect the R-42 Reproducer, or the R-44, as the case may be, to the 500 and "C" terminals on the SX-43.

Turn the VOLUME control to the left as far as possible. (See Fig. 2) This turns off the radio. Plug the power cord into the a-c outlet.

Attach an antenna (aerial) to the post marked A-1. This antenna wire should be, preferably, outdoors above surrounding structures and from 25 to 100 feet long. Attach a wire from a good ground to the post marked GND. In general the better the antenna system, the better the signal will be heard.

Having followed instructions to this point you are now ready to operate your receiver. Let's first tune in a-m (standard broadcast) stations.

## 2. GENERAL OPERATION

1. To turn the receiver on, the VOLUME control is turned to the right to about 4 on the knob scale. When the receiver is on, the dial scales and the meter will light up.

2. Turn the BAND SELECTOR knob left to the red dot. (See Fig. 3)

3. Set the three toggle switches to the "right" hand position. (See Fig. 4)

4. Set four of the six right-hand control knobs to the following positions: "SELECTIVITY" to red dot, "RECEPTION" to red dot, "SENSITIVITY" to 10, and "VOLUME" to 4 or the desired amount of volume. (See Fig. 5)

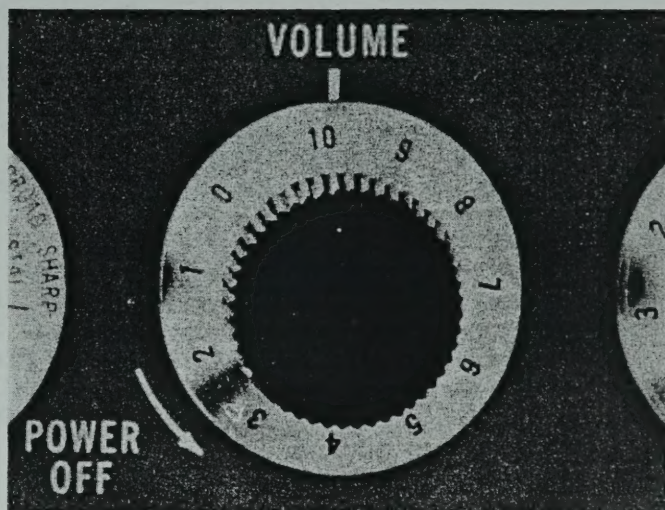


Figure 2. View showing Volume Control

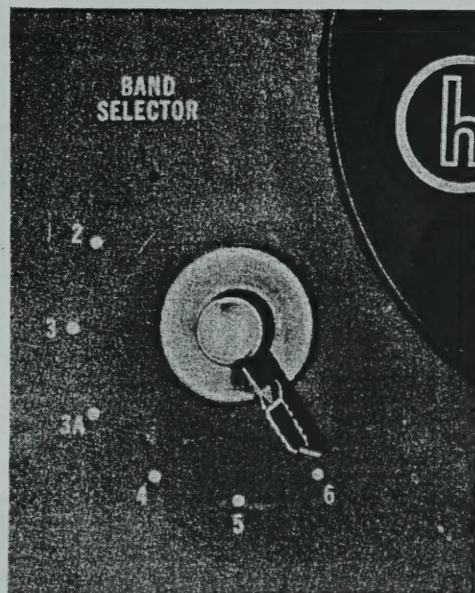


Figure 3. View showing Band Selector Switch

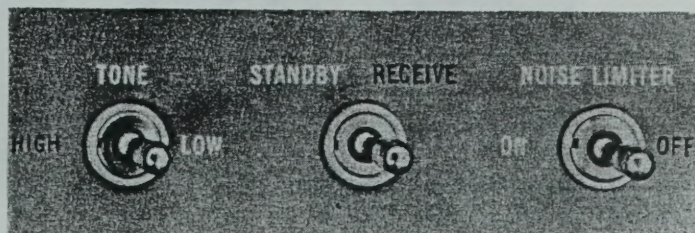


Figure 4. View showing three toggle switches







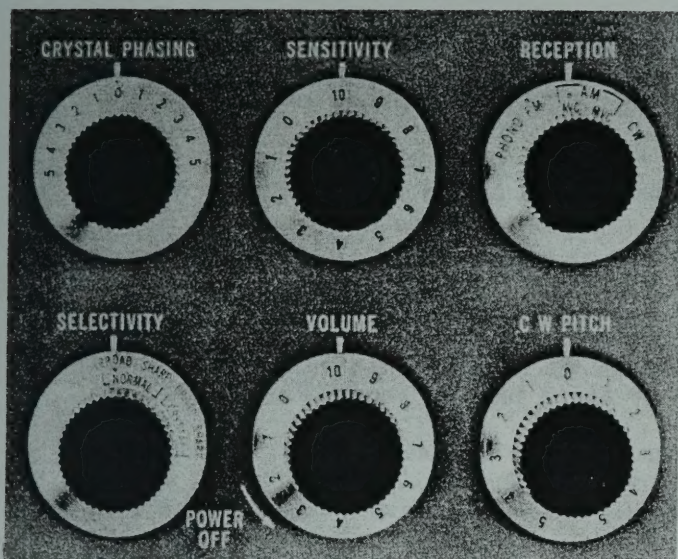


Figure 5. View showing six right hand controls

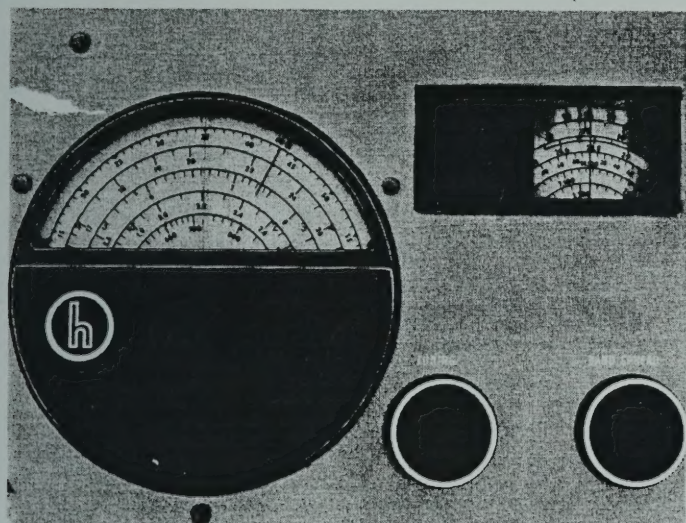


Figure 6.  
View showing Bandsread and Main Tuning Dials

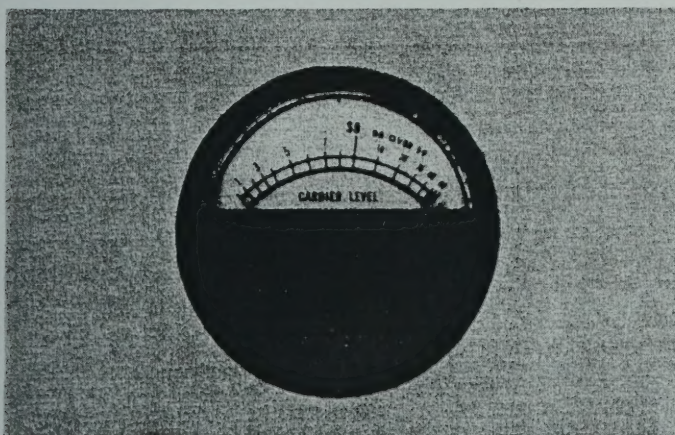


Figure 7. View showing Carrier Meter

5. Set the bandsread (fine tuning) dial to the high end of the dial, (counterclockwise).

6. Now tune in stations by tuning with the main control knob. (See Fig. 6) As the station is tuned in, the carrier meter needle (See Fig. 7) will move from the left side of the scale to the right. Carefully tune the receiver by causing the meter needle to move as far to the right as possible. At this point the receiver is properly tuned to the station.

7. To control the volume, adjust the VOLUME control (See Fig. 2) by turning it to the right for a louder signal or to the left for a softer signal.

8. The frequency calibration on the main tuning dial for the broadcast band is shown on the scale at the bottom of the dial. (See Fig. 6). This scale as all other scales is calibrated in kilocycles and tunes over the broadcast band from 540 to 1650 kc.

9. The next control which will be of interest to you, will be the TONE switch. (See Fig. 4). When it is set to the left, the receiver produces substantially all musical tones as sent out by the radio station. However, by setting this control to BASS, low notes will be amplified.

10. The next control in sequence of importance is the SELECTIVITY control (See Fig. 8). This control is very useful when it is desired to tune in a weak station on a frequency close to a powerful one, in which instance the control should be switched to SHARP.

11. The knobs for CRYSTAL PHASING, RECEPTION, CW PITCH, and SENSITIVITY should in all cases be left set at the red dot or "0".

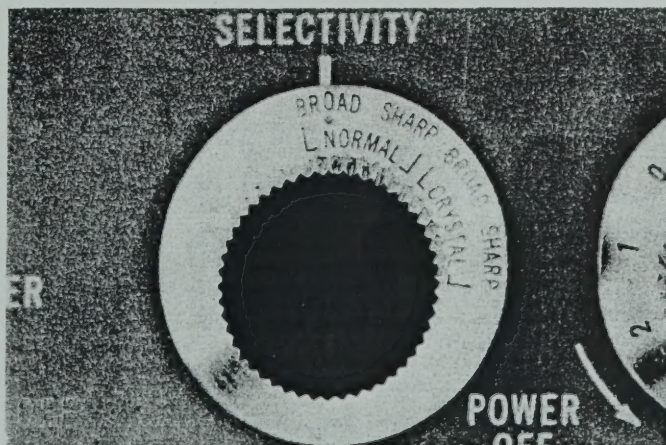


Figure 8. View showing Selectivity Control







Thus far we have tuned the receiver for a-m reception. If it is desired to use it on f-m reception, all controls should be set as previously described with the exception of the following:

1. The RECEPTION knob should be switched to FM (green dot).

2. The BAND SELECTOR switch should be set on the green dot. This covers the band 86 to 109 mc. Most f-m stations are on this band; the few that are not can be tuned in by changing the BAND SELECTOR knob to band 5, 44 to 55 mc.

3. Tune in f-m stations by turning the BAND-SPREAD tuning knob until the BANDSPREAD tuning dial indicates the desired f-m frequency. As the station is being tuned, the meter pointer will deflect when tuned to a transmitted signal.

When meter pointer is at maximum deflection the station is tuned in.

4. The carrier level meter reads the relative signal strength received as well as indicating when the signal is properly tuned in by the maximum deflection of the meter needle. When using the carrier level meter, the "Reception" switch should be set to the RED dot for AM reception or to the GREEN dot for FM reception. The "Sensitivity" control must be set to 10 and the volume controlled by the "Volume" control.

So far we have covered three bands of the receiver (Broadcast, and the f-m bands 86-109 mc and 44-55 mc). For the other three bands of the set, operation is the same, the only difference being in the setting of the BAND SELECTOR switch knob, which may be turned to the desired band.







# DETAILED AND TECHNICAL OPERATING INSTRUCTIONS

## 1. GENERAL

The Model SX-43 is a 11 tube superheterodyne radio receiver designed to provide amplitude modulated (AM) reception over the frequency range of 540 kc to 55 mc and frequency modulated (FM) reception over the frequency range of 44 to 55 mc and 86 to 109 mc bands. Calibrated bandspread is provided for the 80, 40, 20, and the 10 meter Amateur bands.

### FREQUENCY COVERAGE

BAND	COVERAGE	TYPE OF RECEPTION
1	.540 to 1.65 mc	AM/CW
2	1.65 to 5.0 mc	AM/CW
3	5.0 to 15.1 mc	AM/CW
3A	13.9 to 14.4 mc	AM/CW
4	15.1 to 44.0 mc	AM/CW
5	44.0 to 55.0 mc	AM/FM
6	86.0 to 110 mc	FM

Adequate overlap is provided at ends of all bands.

The receiver as normally supplied is designed to operate from a 105 to 125 volts 50/60 cycle, single phase source of a-c power. These operating instructions also cover Universal Models which operate from a 105 to 250 volts, 25/60 cycle single phase a-c source.

## 2. A-C OPERATION

Be sure line voltage is 105 to 125 volts and frequency is 50 to 60 cycles before inserting power cord plug into power outlet. Be sure all tubes are securely inserted in their proper sockets before receiver power is turned on. The chart below lists the current and voltage data.

Power Consumption . . . . .	90 Watts
Frequency . . . . .	50/60 Cycles
Line Voltage . . . . .	117 Volts
Line Current . . . . .	0.77 Amperes

During a-c operation, the shorting plug supplied with the receiver must be in the octal socket on the rear apron of the chassis.

## 3. D-C OPERATION

The receiver may be operated from a 6 volt d-c source, generally a storage battery, and a 270 volt d-c supply in the form of "B" batteries or vibrator type power pack. Consult the

chart on power requirements at the end of this paragraph and provide battery or power pack facilities capable of supplying these demands. The receiver is connected to the d-c supply as follows:

1. Remove the octal shorting plug for a-c operation from the socket SO-1 located on the rear apron of the receiver chassis.

2. Wire an octal plug, as shown in Fig. 9, and plug it into socket SO-1. Use #19 (AWG) wire leads for the 270 volt "B" supply connections to pins #3 and #5, and #12 (AWG) wire leads for the 6 volt battery connections to pins #1, #7, and #8. **CAUTION:** Check the wiring carefully before connecting to the battery supply. The chart below lists the current voltage data.

"B" Voltage . . . . .	270 Volts
"B" Current . . . . .	105 ma.
Filament Voltage . . . . .	6 Volts
Filament Current . . . . .	3.8 Amperes

Total battery drain when operating from a 6-volt vibrator power supply is approximately 11 amperes.

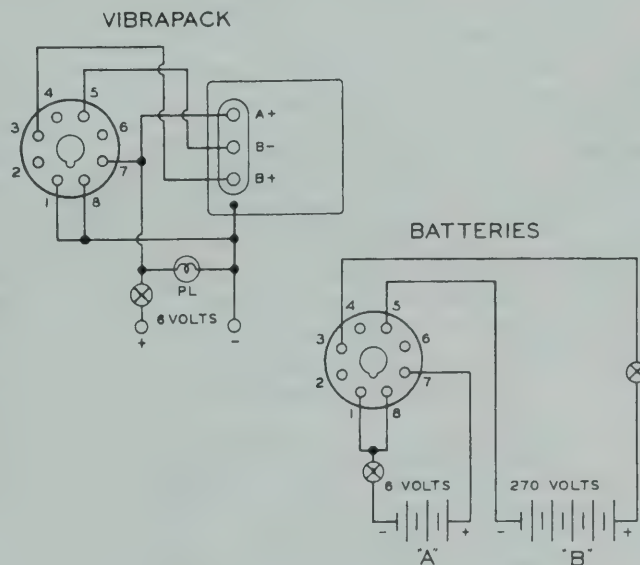


Figure 9. Octal plug wiring diagram

## 4. OUTPUT CONNECTIONS

Output connections for the speaker are provided for on the rear apron of the chassis. Two output impedances are available. Either the







500 or the 5,000 ohm speaker connection may be used according to the output impedance desired. This arrangement of dual output impedances will accommodate most requirements. The Hallicrafters Model PM-23 speaker requires 5000 ohms impedance; the Hallicrafters Model R-42 and R-44, requires 500/600 ohms. However, any standard type, permanent magnet dynamic speaker with proper output transformer may be connected to the output terminals. If the permanent magnet dynamic speaker impedance is unknown, try the 5000 ohm and then the 500/600 ohm impedance, and use the one which gives the better tone quality and volume.

## 5. PHONO INPUT CONNECTION

A receptacle is provided on the rear apron of the chassis for connecting a phonograph record player to the receiver. This receptacle is designed to accommodate a Cinch, type M-93, pin connector plug. (See Fig. 10 for diagram)

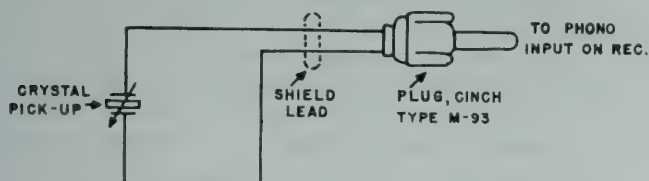


Figure 10. Phono input diagram

## 6. ANTENNA AND GROUND CONNECTIONS

The Model SX-43 is designed for a 300 ohm antenna impedance. The antenna impedance is not critical and excellent reception can be obtained from an antenna of from 50 to 600 ohm impedance. For maximum performance, the best possible antenna should be employed.

The antenna terminals on the Model SX-43 are arranged for any type of antenna from those requiring a ground to those using a transmission line. The transmission type of antenna connects to the A-1 and A-2 terminals whereas a single wire antenna utilizes terminal A-1 for the antenna lead. A-2 and GND terminals must be connected together and connected to a good ground.

## 7. DETAILED OPERATIONS

a. Controls and Their Functions. In order to obtain the desired results from the receiver, it is recommended that you become familiar with the function of each control. Red indicators on the controls for broadcast reception and green for f-m reception are there to simplify operation. Controls and their functions are as follows:

(1) BAND SELECTOR. The BAND SELECTOR knob operates the bandswitch to select the desired band frequencies.

(a) General Coverage Dial. The general coverage dial has four calibrated scales and a logging scale. Three scales are calibrated in megacycles and the broadcast scale is calibrated in kilocycles. The outer logging scale is divided into 100 divisions for logging use. The dial settings for the various amateur bands are indicated on the main tuning dial by red lines and the abbreviations 80 M, 40 M, etc. directly above the lines. When tuning the amateur bands with the calibrated bandspread dial, the general coverage dial must be set at the setting corresponding to the amateur band desired. Since the general coverage and bandspread tuning systems are electrically related on the first four bands, it is necessary to set the bandspread dial to the high frequency end or minimum capacity when tuning the receiver with the general coverage dial control to obtain correct receiver frequency readings on the general coverage dial.

(b) Bandspread Dial. The bandspread dial has four scales calibrated for the amateur bands and two scales calibrated for the two high frequency FM bands. The first four scales are calibrated to read receiver frequencies in kilocycles when the general coverage dial has been set to the corresponding indexing line. All FM and the 6 meter amateur band tuning is done with the bandspread dial as the general coverage dial and condenser is switched out of the circuit on bands 5 and 6. On band 5 the receiver employs dual conversion, substantially reducing image interference and permitting normal bandwidth for 6 meter AM amateur reception.

(2) NOISE-LIMITER-ON Switch. This switch opens or closes the noise limiter circuit and is to be set at ON when the operator wishes to limit excessive noise resulting from automobile ignition and other forms of noise interference.

The noise limiter circuit "clips" the intermittent noise peaks down to the level of the desired signal where they tend to become unnoticeable.

(3) RECEIVER-STANDBY Switch. When set at STANDBY, this switch renders the receiver







inoperative, while transmitting or for any other purpose, although the tube heaters remain hot and ready for instant use.

(4) CRYSTAL PHASING Control. This control permits the discrimination of code signals whose frequencies are very nearly the same. The SELECTIVITY control must be set at one of its two crystal selectivity positions when using the phasing control.

It is extremely simple to attain single signal c-w reception with the SX-43. First, set the RECEPTION switch at CW and the SELECTIVITY control at CRYSTAL SHARP. Pick a good solid c-w signal, preferably a commercial station because a commercial is likely to stay on long enough for you to complete the phasing adjustment for single signal reception.

You will find on tuning across this signal that it has two amplitudes. Tune first to the weaker of these two amplitudes. Now, turn the CRYSTAL PHASING control until the weaker of the two amplitudes is reduced to a minimum. Then, tune to the stronger of the two amplitudes and adjust the PITCH control to a tone most pleasing to you. This adjustment for single signal selectivity will hold with no further adjustment unless you change the phasing control. (See Fig. 11 for an illustration of single signal operation.)

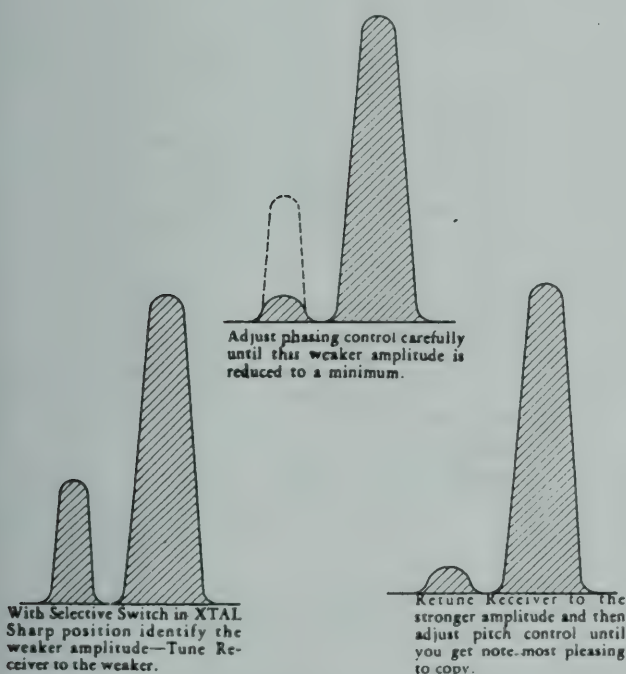


Figure 11.

Illustration showing Single Signal Operation

(5) SELECTIVITY Control. This control determines the sharpness of the response. Four degrees of selectivity are provided, ranging from CRYSTAL SHARP for c-w code reception under difficult receiving conditions to NORMAL BROAD response for BC reception.

1. BROAD I-F (for high fidelity reception).
2. SHARP I-F (reduced adjacent channel interferences and gives less highs).
3. CRYSTAL BROAD (similar to sharp i-f but sharper cutting on sidebands).
4. CRYSTAL SHARP (position of extreme selectivity - practically no sideband content).

(6) TONE Control. This control selects the tone qualities desired by the operator. The types of response available are LOW, and HIGH.

(a) LOW. The high audio frequencies are attenuated to provide a minimum response for voice reception when the background noise level is objectionably high.

(b) HIGH. The bass and high frequencies are passed at the same level thereby providing as near a true reproduction of the original transmitted signal as possible. The response is essentially flat between 70 and 8,000 cycles per second for good fidelity reception.

(7) CW PITCH Control. This control varies the frequency of the beat frequency oscillator thus varying the pitch of the c-w code signal as desired.

(8) SENSITIVITY Control. This control adjusts the sensitivity by varying the resistance in the cathodes of the r-f and i-f amplifiers. Turning the control to the right increases the sensitivity. This control must be set at maximum sensitivity when using the carrier level meter. At any other setting of this control, readings of the carrier meter are meaningless.

## 8. "S" METER ADJUSTMENT

Adjustment of the "S" meter control is performed by varying the knurled knob located on the rear apron of the receiver chassis. This control enables you to properly set the "S"







meter to zero. In order to make the adjustment correctly, advance the SENSITIVITY control to 10. Set the "reception" switch to AVC position. Short the two antenna terminals to the ground terminal and tune receiver off station. Then

adjust the "S" meter control until pointer rests at "0". Remove the short from the antenna terminals and the meter will indicate the relative carrier strength of each incoming signal as it is tuned in.

## SERVICE

### 1. REPLACING TUBES

All tubes are accessible at the top of the chassis through the hinged cover of the cabinet. When replacing tubes, check tube type carefully and replace with the correct type. Refer to top view of the chassis to determine the location of the tubes (See Fig. 12).

### 2. REPLACING DIAL LAMPS

The receiver employs three dial lamps with the bayonet type sockets to illuminate the main

and bandspread tuning dials as well as the meter scale. The lamps are to be replaced with 6-8 volt, 250 ma, (blue bead) #44 G.E. type, or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamps.

### 3. SERVICE OR OPERATING QUESTIONS

If you should have any questions regarding the service or operation of your receiver do not hesitate to contact the dealer from whom the set was purchased.

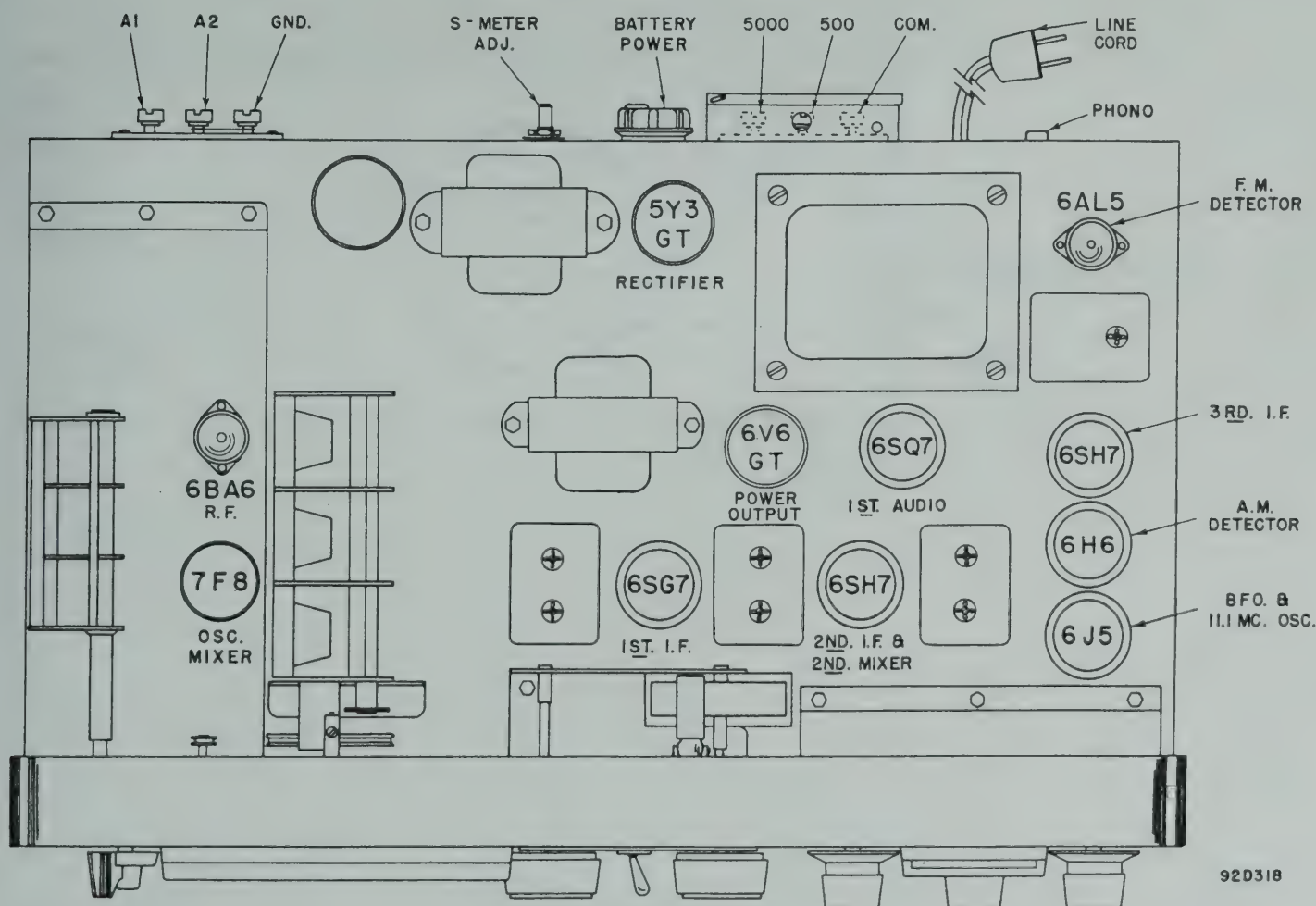


Figure 12. Top view of Chassis





## REMOTE CONTROL OPERATION

Connect a single pole single throw relay to pins #5 and 8 on PL1 located on the rear apron

of the receiver. Receiver "SEND- RECEIVE" switch is then placed in "SEND" position. When the Transmitter is turned on the Receiver is automatically disabled.

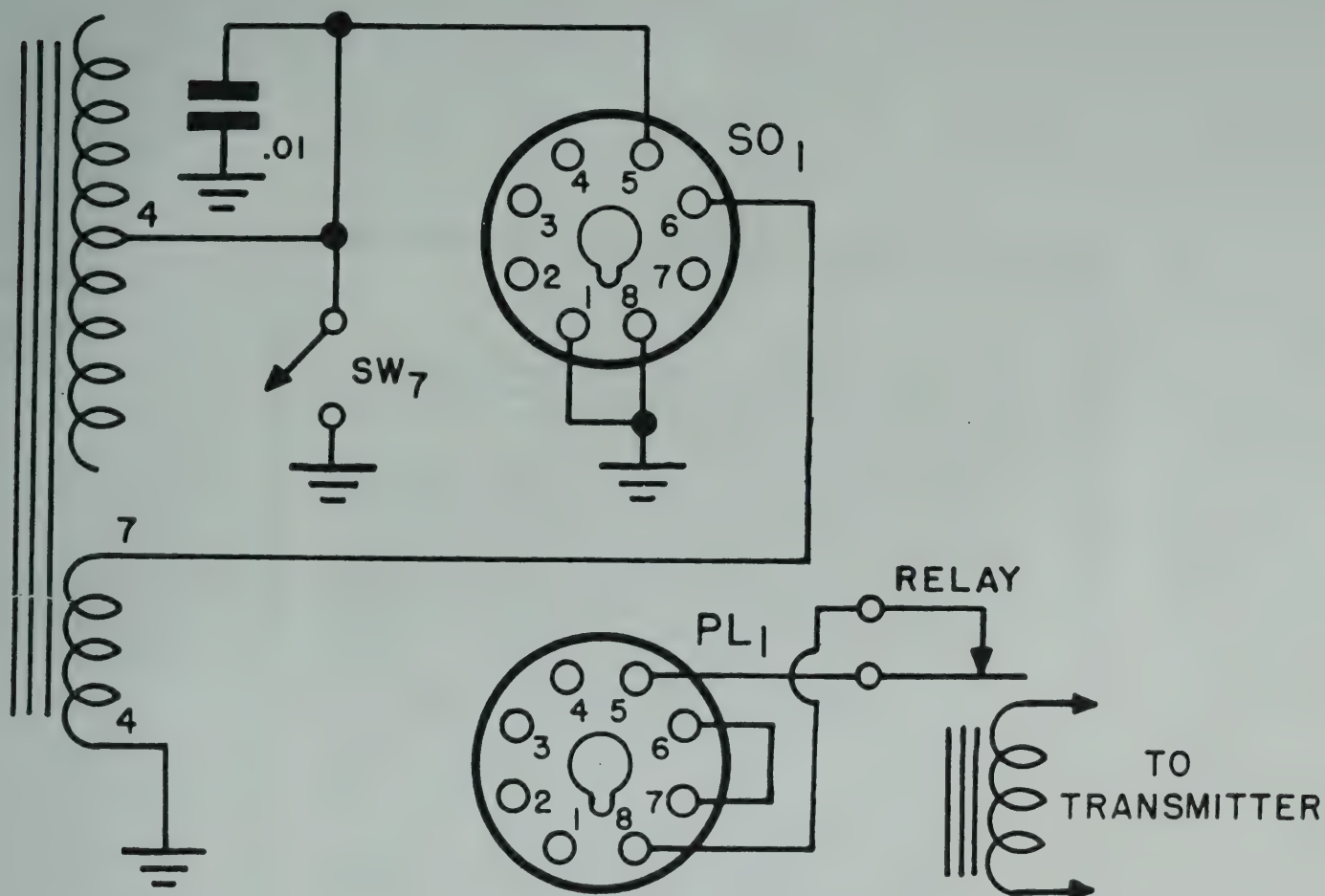


Figure 13. Schematic Remote Control Operation





## Warranty

The Hallicrafters Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer or wholesaler from whom purchased, intact, for our examination within all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

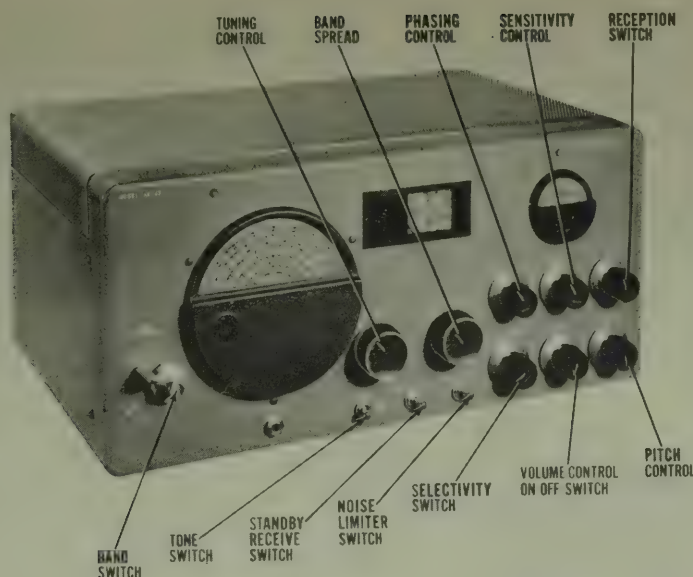
This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside of our authorized facilities, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

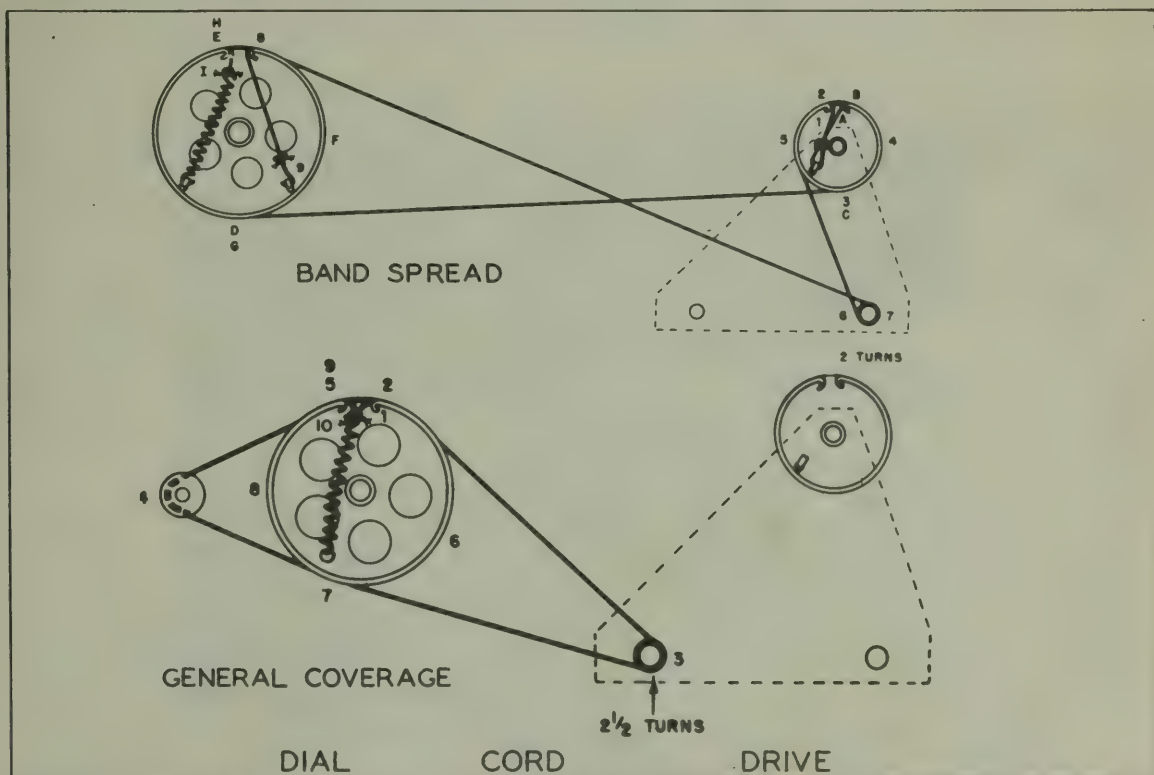






HALLICRAFTERS MODEL SX-43

TRADE NAME	Hallicrafters, Model SX-43		
MANUFACTURER	Hallicrafters Co., 5th & Kostner Avenues, Chicago 24, Ill.		
TYPE SET	AC Operated Multi-Band AM-FM Commercial Communications Receiver		
TUBES (ELEVEN)	Types, 6BA6 RF Amp., 7F8 Converter, 6SG7 1st IF Amp., 6SH7 2nd IF-2nd Mixer, 6SH7 3rd IF Amp., 6AL5 FM Ratio Det., 6H6 AM Det., 6J5 BFO-2nd Osc., 6SQ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.		
POWER SUPPLY	105-125 Volts AC		
RATING	.68 Amp. @ 117 Volts AC		
TUNING RANGE-BROADCAST	540-1700KC	SHORT WAVE	1.7-5MC, 5-16MC, 14-14.4MC, 15.5-44MC, 44-55MC
		FREQ. MOD.	44-55MC, 86-109MC



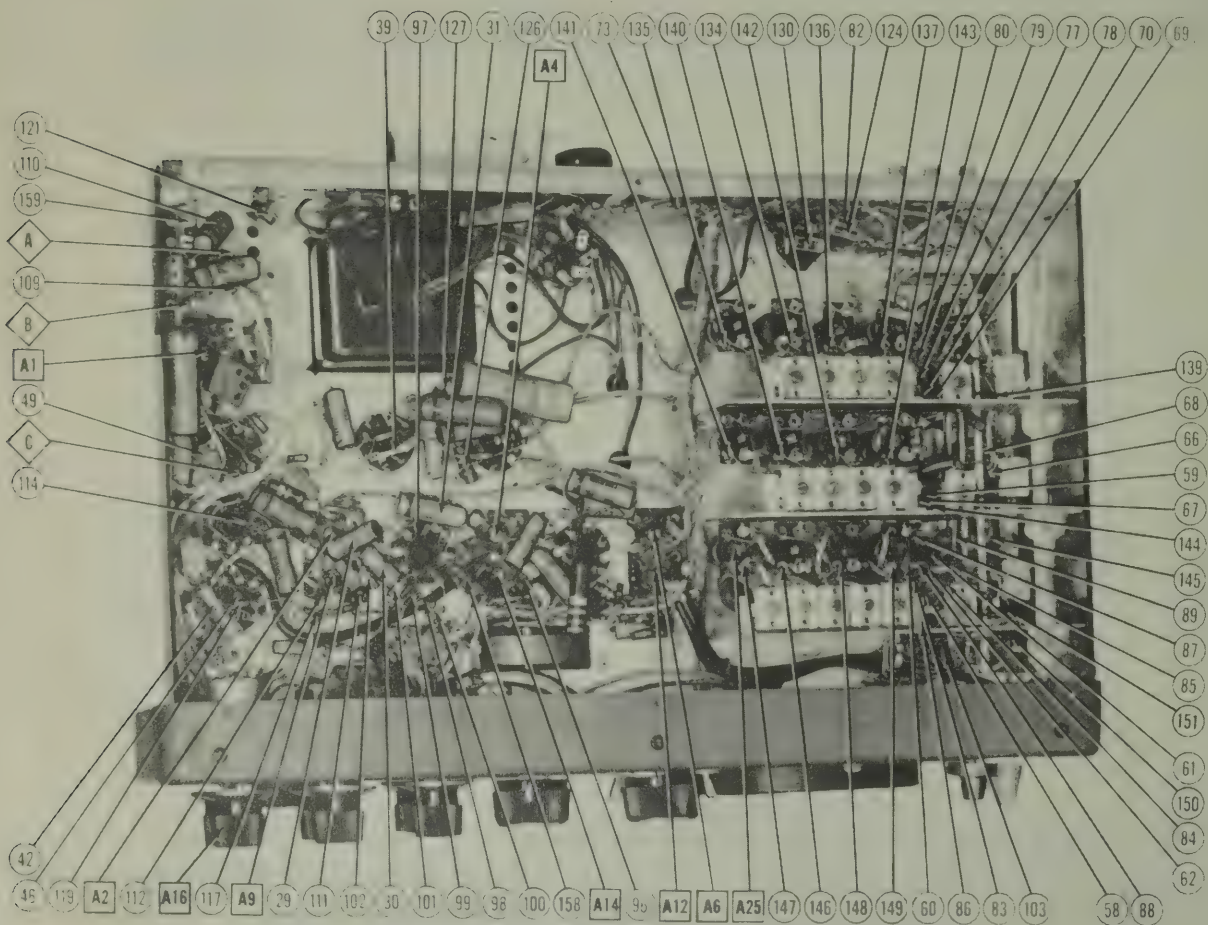
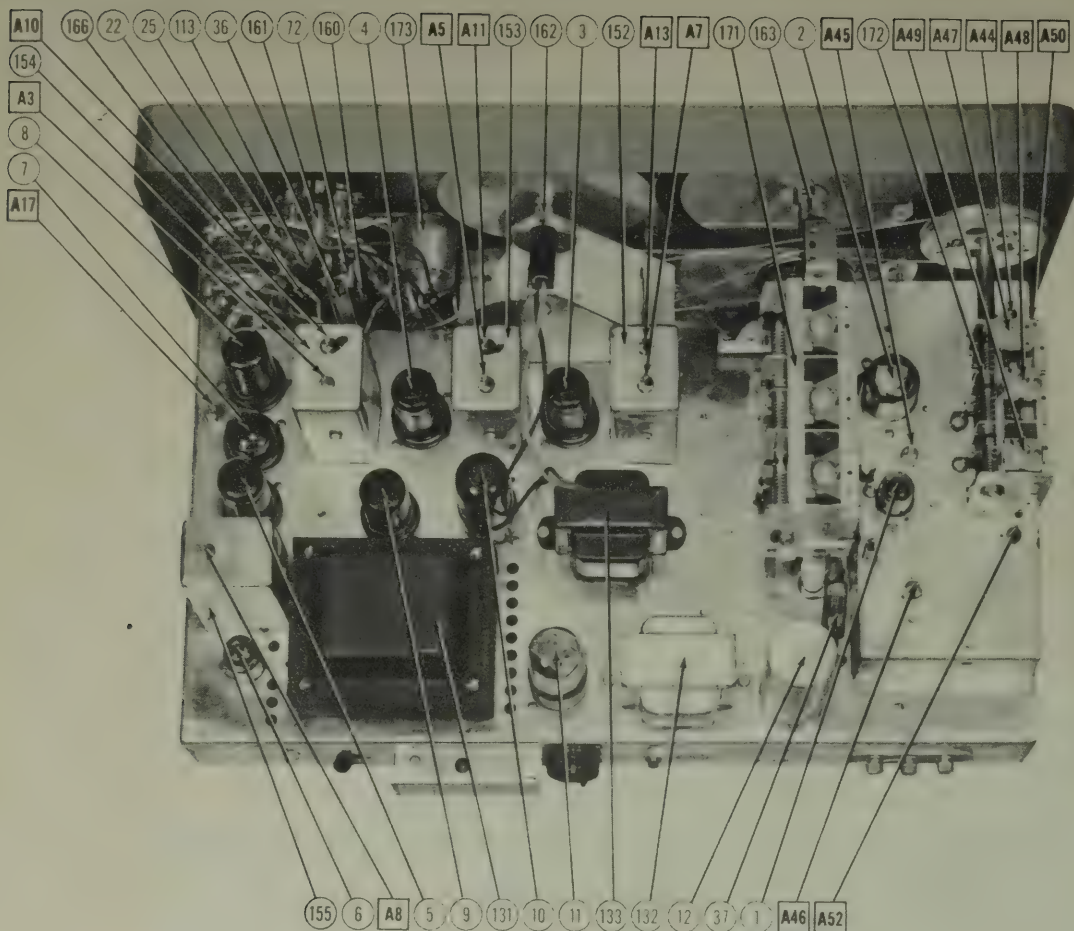
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# RF ALIGNMENT

RMA Dummy consists of 200 MMFD cap. in series with 20 microhenry choke with choke shunted by a 400 MMFD cap. in series with a 400Ω carbon resistor.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10 RMA Dummy (see prealignment notes)	High side to ant. terminal "A1". Low side to "A2" with "A2" grounded.	1500KC	Band 1	1500KC	Across voice coil	A18, A19, A20	Adjust for maximum output in order given.
11 "	"	600KC	"	600KC	"	A21	Adjust for maximum output in order given. Repeat Steps 10 & 11 until no further improvement can be made.
12 "	"	4.5MC	Band 2	4.5MC	"	A22, A23, A24	Adjust for maximum output in order given.
13 "	"	2MC	"	2MC	"	A25	Adjust for maximum output in order given. Repeat Steps 12 & 13 until no further improvement can be made.
14 330Ω carbon res.	"	14MC	Band 3	14MC	"	A26	Adjust for maximum output.
15 "	"	"	"	Tune for maximum output.	"	A27, A28	Rock tuning cap. and adjust for maximum output.
16 "	"	6MC	"	6MC	"	A29	Adjust for maximum output.
17 "	"	"	"	Tune for maximum output.	"	A30, A31	Rock tuning cap. and adjust for maximum output. Repeat Steps 14 thru 17 until no further improvement can be made.
18 "	"	14MC	Band 3A	Main tuning dial at 20 meter band marker. Band spread at 14MC.	"	A32	Adjust for maximum output.
19 "	"	14.2MC	"	Main tuning dial at 20 meter band marker. Band spread tuned maximum output.	"	A33, A34	Rock tuning cap. and adjust for maximum output.
20 "	"	36MC	Band 4	36MC	"	A35	Adjust for maximum output. Tune sig. gen. to 35.1MC. If signal is not heard, retune sig. gen. to 36MC and close A35 to next peak. Adjust for maximum output and recheck for image.
21 "	"	"	"	Tune for maximum output.	"	A36, A37	Rock tuning cap. and adjust for maximum output.
22 "	"	18MC	"	18MC	"	A38	Adjust for maximum output.
23 "	"	"	"	Tune for maximum output.	"	A39, A40	Rock tuning cap. and adjust for maximum output. Repeat Steps 20 thru 23 until no further improvement can be made.
24 "	"	54MC	Band 5	54MC (On band-spread dial)	"	A41	Adjust for maximum output.
25 "	"	"	"	Tune for maximum output.	"	A42, A43	Rock tuning cap. and adjust for maximum output.
26 "	"	46MC	"	46MC	"	A44	Adjust for maximum output.
27 "	"	"	"	Tune for maximum output.	"	A45, A46	Rock tuning cap. and adjust for maximum output. Repeat Steps 24 thru 27 until no further improvement can be made.
28 "	"	"	"	44.6MC (See remarks)	"	A17	Tune for fourth harmonic of the second oscillator at approx. 44.6MC. If signal is not heard A17 is adjusted to the image frequency and Step 9 must be repeated.
					CONNECT VTVM		
29 330Ω carbon res.	High side to ant. terminal "A1". Low side to "A2" with "A2" grounded.	106MC	Band 6	106MC	DC probe to Point ⬠. Common to chassis	A47	Adjust for maximum deflection.
30 "	"	"	"	Tune for maximum deflection.	"	A48, A49	Rock tuning cap. and adjust for maximum deflection.
31 "	"	89MC	"	89MC	"	A50	Adjust for maximum deflection.
32 "	"	"	"	Tune for maximum deflection.	"	A51, A52	Rock tuning cap. and adjust for maximum deflection. Repeat Steps 29 thru 32 until no further improvement can be made.

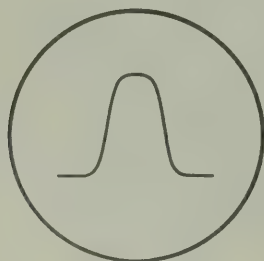


FIG. 1



FIG. 2



# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA			INSTALLATION NOTES
		HALLICRAFTERS PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	
1	RF Amp.	68A6	68A6	7BK	
2	Converter	7K9	7K9	8BK	
3	1st IF Amp.	68H7	68G7	8BK	
4	2nd IF-2nd Mixer	68H7	68H7	8BK	
5	3rd IF Amp.	68H7	68H7	8BK	
6	RF Rectifier	68L5	68L5	8RT	
7	AF Det.	68L5	68L5	8RT	
8	BFO-2nd Osc.	68L5	68L5	8RT	
9	AF Amp.	68Q7	68Q7	8Q	
10	Power Output	68Q7	68Q7	8Q	
11	Rectifier	5Y3G7	5Y3G7	7AC	

## CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		HALLICRAFTERS PART No.	AEROVOX PART No.	CORNEILL DUBILIER PART No.	
12A	60	45B113	45B113	UPE222245	
B	20		45B113	BR2045	
13	20	42A033	45B113	BR2045	
14	10	46A1034	45B113	BR2045	
15	10	46A1034	45B113	BR2045	
16	10	46A1034	45B113	BR2045	
17	10	46A1034	45B113	BR2045	
18	10	46A1034	45B113	BR2045	
19	10	46A1034	45B113	BR2045	
20	10	46A1034	45B113	BR2045	
21	10	46A1034	45B113	BR2045	
22	10	46A1034	45B113	BR2045	
23	10	46A1034	45B113	BR2045	
24	10	46A1034	45B113	BR2045	
25	10	46A1034	45B113	BR2045	
26	10	46A1034	45B113	BR2045	
27	10	46A1034	45B113	BR2045	
28	10	46A1034	45B113	BR2045	
29	10	46A1034	45B113	BR2045	
30	10	46A1034	45B113	BR2045	
31	10	46A1034	45B113	BR2045	
32	10	46A1034	45B113	BR2045	
33	10	46A1034	45B113	BR2045	
34	10	46A1034	45B113	BR2045	
35	10	46A1034	45B113	BR2045	
36	10	46A1034	45B113	BR2045	
37	10	46A1034	45B113	BR2045	
38	10	46A1034	45B113	BR2045	
39	10	46A1034	45B113	BR2045	
40	10	46A1034	45B113	BR2045	
41	10	46A1034	45B113	BR2045	
42	10	46A1034	45B113	BR2045	
43	10	46A1034	45B113	BR2045	
44	10	46A1034	45B113	BR2045	
45	10	46A1034	45B113	BR2045	
46	10	46A1034	45B113	BR2045	
47	10	46A1034	45B113	BR2045	
48	10	46A1034	45B113	BR2045	
49	10	46A1034	45B113	BR2045	
50	10	46A1034	45B113	BR2045	
51	10	46A1034	45B113	BR2045	
52	10	46A1034	45B113	BR2045	
53	10	46A1034	45B113	BR2045	
54	10	46A1034	45B113	BR2045	
55	10	46A1034	45B113	BR2045	
56	10	46A1034	45B113	BR2045	
57	10	46A1034	45B113	BR2045	
58	10	46A1034	45B113	BR2045	
59	10	46A1034	45B113	BR2045	

# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA			IDENTIFICATION CODES
		HALLICRAFTERS PART No.	IEC PART No.		
112	2.2 Meg.	RC20A151K	BTS-2.2 Meg		Red-Red-Grn. AVG Network
113	150K	RC20A151K	BTS-2.2 Meg		Red-Red-Grn. AVG Shunt
114	2.7 Meg.	RC20A151K	BTS-2.7 Meg		Grn-Red-Grn. Noise Limiter Load
115	82K	RC20A151K	BTS-1 Meg		Br.-Blk.-Grn. Diode Load
116	1 Meg.	RC20A151K	BTS-1 Meg		Red-Grn.-Yl. Diode Load
117	250K	RC20A151K	BTS-1 Meg		Br.-Blk.-Grn. Noise Limiter Bias Network
118	1 Meg.	RC20A151K	BTS-1 Meg		Br.-Grn.-Grn. BFO Plate
119	47K	RC20A151K	BTS-15K		Br.-Grn.-Grn. Photo Shunt
120	470K	RC20A151K	BTS-15K		Br.-Grn.-Blue Av. Grid
121	15 Meg.	RC20A151K	BTS-15K		Red-Red-Yl. AF Plate Load
122	220K	RC20A151K	BTS-220K		Br.-Blk.-Red Output between Drooping
123	100K	RC20A151K	BTS-100K		Yl.-Yl.-Yl. Output Grid
124	470K	RC20A151K	BTS-470K		Red-Yl.-Br. Output Cathode
125	270K	RC20A151K	BTS-270K		Or.-Or.-Or. Tone Comp.
126	33K	RC20A151K	BTS-33K		Br.-Blk.-Red
127	100K	RC20A151K	BTS-100K		Yl.-Yl.-Br. Head phones shunt
128	470K	RC20A151K	BTS-470K		Yl.-Yl.-Red Filter
129	470K	RC20A151K	BTS-470K		
130	470K	RC20A151K	BTS-470K		

## TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA			MERIT PART No.
		HALLICRAFTERS PART No.	STANCOR PART No.	THORDARSON PART No.	
131	117V AC 530V CT 15.2V AC 6.3V AC	520143		P-6313	P-25534
132	7.44A 1.6A DC @ 2.0A @ 4.0A				

#Add series resistor to reduce plate voltage.

## FILTER CHOKE

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		HALLICRAFTERS PART No.	STANCOR PART No.	THORDARSON PART No.	
133	0.052A DC 230K	55B067	G-1709	720053	Idr-11 one new mounting hole.

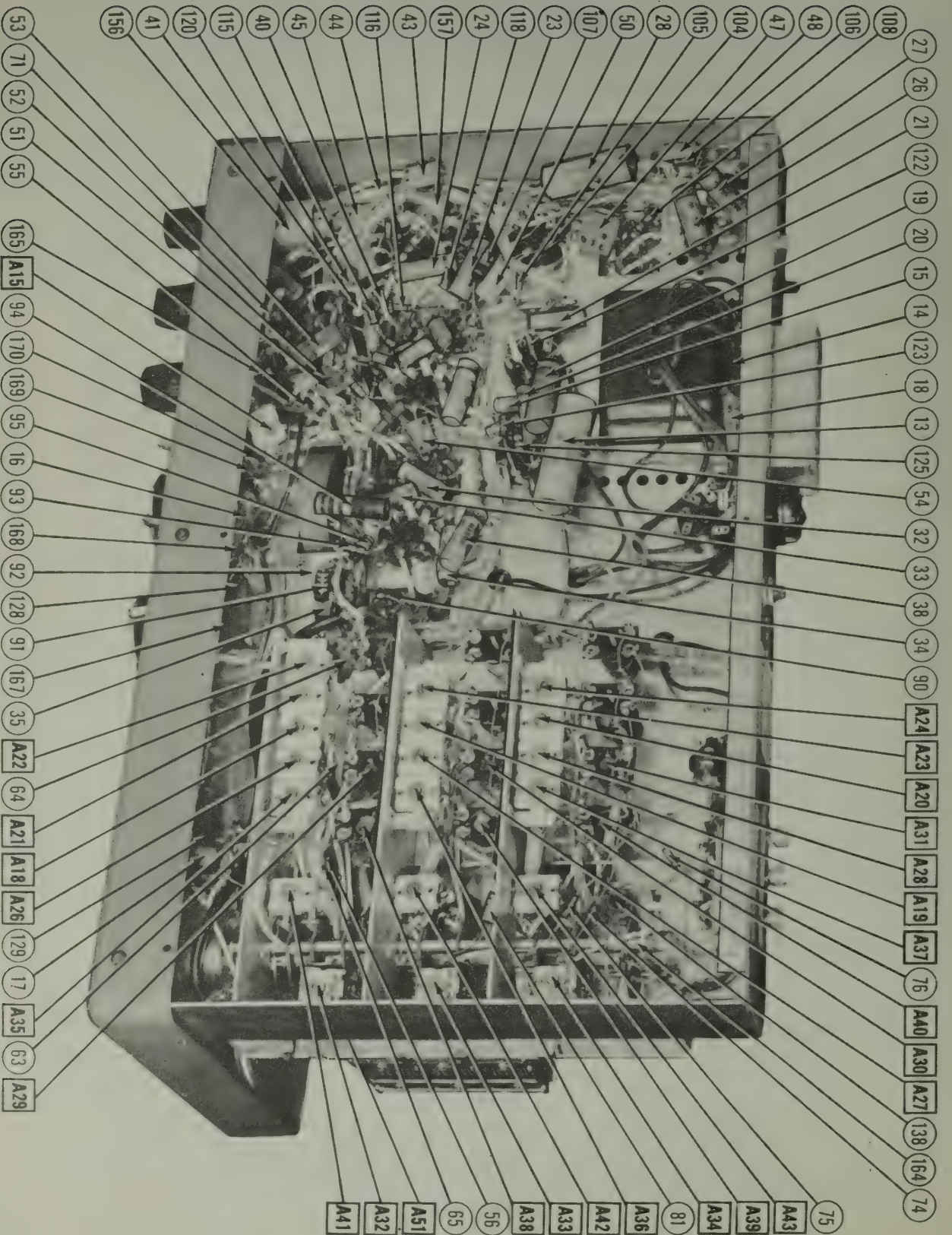
## TRANSFORMER (OUTPUT)

ITEM No.	RATING	REPLACEMENT DATA			INSTALLATION NOTES
		HALLICRAFTERS PART No.	STANCOR PART No.	THORDARSON PART No.	
134	40002 50002	55B015			

## R F COILS

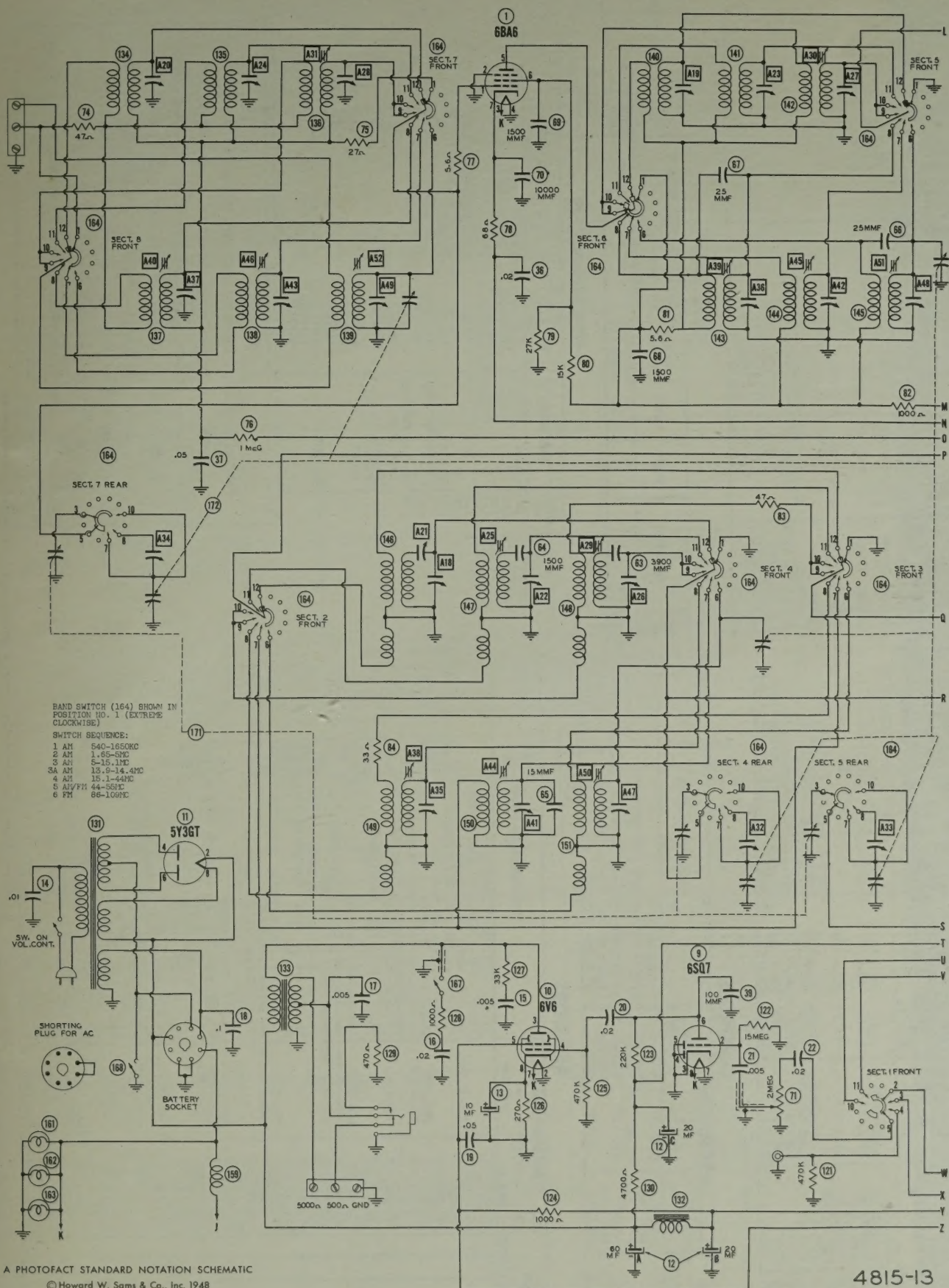
ITEM No.	USE	REPLACEMENT DATA			INSTALLATION NOTES
		HALLICRAFTERS PART No.	MEISSNER PART No.		
134	Ant. Coil 1	51B928			
135	2	51B927			
136	3	51B926			
137	4	51B925			
138	5	51B924			
139	6	51B923			
140	7	51B922			
141	8	51B921			
142	9	51B920			
143	10	51B919			
144	11	51B918			
145	12	51B917			
146	13	51B916			
147	14	51B915			
148	15	51B914			





27 26 21 122 19 20 15 14 123 18 13 125 54 32 33 38 34 90 A24 A23 A20 A31 A28 A19 A37 76 A40 A30 A27 138 164 74  
 108 106 48 47 104 105 28 50 107 23 118 24 157 43 116 44 45 40 115 120 41 156  
 71 52 51 55 165 A15 94 170 169 95 16 93 168 92 128 91 167 35 A22 64 A21 A18 A26 129 17 A35 63 A29  
 75 A43 A39 A34 81 A36 A42 A33 A38 56 65 A51 A32 A41







## PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES AND INSTALLATION NOTES
		HALLICRAFTERS PART No.	AEROVOX PART No.	CORNEL-DUBILIER PART No.	SOLAR PART No.	
60	Temp. Comp.	44A158				
61	51	CC200K510K	1468-00005	SW5Q5	M0.5-45	Osc. Plate Bypass
62	100	CC250K101K	1468-0001	SW5T1	M0.5-31	Osc. Grid Cap.-Cer.
63	3900	CM35A392J				Osc. Coupling-Cer.
64	1500	CM30A152J	1464-0015	1R5D15	M0.5-215	Fixed Pad
65	15	CC200K150K				
66	25	500	1468-00025	SW5Q25	M0.5-425	Fixed Trimmer-Cer.
67	25	47A141	1469-00025	SW5Q25	M0.5-425	RF Coupling-Cer.
68	1500	47A61	1467-0015	1W5D15	M0.5-215	RF Decoupling-Cer.
69	1500	350	1467-0015	1W5D15	M0.5-215	RF Screen Bypass-Cer.
70	10000	350	684-01	DT681	ST-6-01	RF Cathode Bypass-Cer.

Note-Not used in some models.

## CONTROLS

ITEM No.	RATING	REPLACEMENT DATA				INSTALLATION NOTES
		HALLICRAFTERS PART No.	IRC PART No.	CLAROSTAT PART No.		
71A	2 Meg. B Shaft	25B601	D13-139	N-66-Z		Volume Control
71B	2 Meg. C Switch	Not Req.	41	Not Req.		Attach to 71A per instructions
72A	10K $\Omega$ B Shaft	25B577	D16-116	M-30-V		Sensitivity Control
73	500 $\Omega$	Not Req.	W-500	Not Req.		Attach to 72A per instructions
				43-500		"g" Meter Control

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES
		HALLICRAFTERS PART No.	IRC PART No.			
74	47K	RC20A6470K				V1-V1-Blk. Ant. Loading
75	27K	RC20A270K	BTS-1 Meg.			Red-V1-Blk. Ant. Loading
76	1 Meg.	RC20A105K				Br.-Blk.-Grn. Ant. Loading
77	5.6K	23A011				Grn.-Blue-Grn. Ant. Loading
78	27K	RC20A270K	BTA-27K			Blue-Gray-Blk. Ant. Loading
79	27K	RC20A270K	BT-2-15K			Red-V1-Gr. Ant. Loading
80	15K	RC20A150K				Grn.-Blue-Gold Par. Suppressor
81	5.6K	23A011				Br.-Grn.-Gr. Par. Suppressor
82	1000 $\Omega$	RC20A102K	BTS-1000			Grn.-Blue-Gold Par. Suppressor
83	47K	RC20A470K				V1-V1-Blk. Par. Suppressor
84	22K	RC20A220K				Or.-Or.-Blk. Par. Suppressor
85	10K	RC20A10K	BTS-22K			Red-Red-Or. Osc. Grid
86	10K	RC20A10K	BTA-10K			Br.-Blk.-Or. Osc. Grid
87	2.2 Meg.	RC20A220K	BTS-2.2 Meg.			Red-Red-Grn. Conv. Grid
88	1000 $\Omega$	RC20A102K				Br.-Blk.-Red Conv. Cathode
89	15K	RC20A150K				Br.-Grn.-Blk. Par. Suppressor
90	15K	RC20A150K				Br.-Blk.-Blk. Par. Suppressor
91	47K	RC20A470K	BTA-47K			V1-V1-Or. Conv. Plate Dropping
92	22K	RC20A220K	BTS-22K			Red-Red-Or. Bleeder
93	5.6K	23A011				Gray-Red-Blk. 1st IF Cathode
94	15K	RC20A150K	BT-2-15K			Br.-Grn.-Or. 1st IF Screen
95	27K	RC20A270K	BTA-27K			Red-V1-Or. Bleeder
96	3300 $\Omega$	RC20A330K	BTS-3300			Or.-Or.-Red 1st IF Plate Decoupling
97	1 Meg.	RC20A105K	BTS-1 Meg.			Br.-Blk.-Grn. 2nd IF Grid
98	500 $\Omega$	RC20A500K				Gray-Red-Blk. Series "S" Meter
99	150K	RC20A150K				Br.-Grn.-Br. 2nd IF Cathode
100	680K	RC20A680K	BTS-680			Blue-Gray-Br. 2nd IF Cathode
101	33K	RC20A330K	BTA-33K			Or.-Or.-Or. 2nd IF Screen
102	3300 $\Omega$	RC20A330K	BTS-3300			Or.-Or.-Red 2nd IF Plate Decoupling
103	1000 $\Omega$	RC20A102K	BTS-1000			Br.-Blk.-Red 2nd IF Cathode
104	220K	RC20A220K	BTS-220K			Red-Red-Yl. 3rd IF Grid
105	1 Meg.	RC20A105K	BTS-1 Meg.			Br.-Blk.-Grn. AVC Network
106	150K	RC20A150K	BTA-150K			Br.-Grn.-Yl. Par. Suppressor
107	100K	RC20A100K	BTS-100K			Br.-Blk.-Yl. 3rd IF Decoupling
108	100K	RC20A100K	BTS-100K			Br.-Blk.-Yl. De-emphasis
109	100K	RC20A100K	BTS-100K			Br.-Blk.-Yl. Ratio Det. Diode Load
110	100K	RC20A100K	BTS-100K			Br.-Blk.-Yl. "g" Meter Control
111	100K	RC20A100K	BTS-100K			Br.-Blk.-Yl. AM Diode Filter

## PARTS LIST AND DESCRIPTIONS (Continued)

## R F COILS

ITEM No.	USE	REPLACEMENT DATA			
		DC RES.	HALLICRAFTERS PART No.	MEISSNER PART No.	
149	Osc. Coil 4	1.2	51B936		
150	" " 5	0.2	51B935		
151	" " 6	0.2	51B941		
152	1st IF AM	2.32	50C212		*Includes both secondaries.
153	2nd IF FM	6.82	50C213		*Includes both primaries.
154	3rd IF AM	7.82	50C213		
155	3rd IF FM	1.2	50C214		
156	FM Det.	9.68	50C214		
157	Trans.	22	50C208		
158	AM BFO Coil	1.22	54B033-1		
159	157 Ind. Osc.	0.2	51B984		
160	RF Choke	3.22	53A108		
	" "	.22	53B009		
	" "	9.52	53A107		

## DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HALLICRAFTERS PART No.		
161	Bayonet	6-8	0.15	Brown			
162	"	"	0.25	Blue	39A004		Type 47

## MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
164	Switch	60C261	Band Selectivity
165	"	60B263	Reception
166	"	60B262	Tone
167	"	60A138	Standby-Receive
168	"	60A138	Noise Limiter
169	Crystal	19A123	455KC
170	3 Gang Var. Cap.	48C174	(15-475MFD) Each section (AM)
171	"	48C174	(Bandsread-FM)
172	Phasing Control	49A182	
173	Capacitor	44A047	A15
	Trimmer	44B197	A18, A21, A22, A26, A35
	Assby.	44B199	A19, A23, A27, A36
	"	44B199	A20, A24, A28, A37
	"	44A047	A32, A33, A34, A49
	"	44A200	A41, A42, A43
	"	44A115	A47
	Meter	82B125	Carrier Level

## REPLACING LAMPS

The two dial lamps and meter lamp are accessible through the hinged cabinet cover. Remove two screws holding the metal light shield to expose the dial lamps. Replace these with 6-3V. 250MA. G8. #44 (Blue bead) or equivalent. The carrier level meter lamp is made accessible by removing the four screws holding the protective cover located directly behind the meter. Replace this lamp with a 6-8 V. 150 MA. #47 (Brown bead) or equivalent. Do not use a 250 MA. lamp in the meter housing as the excessive heat will discolor the meter scale.



# ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set all controls as follows except where noted otherwise: "Crystal-phasing" to zero, "Sensitivity" at maximum, "Reception" to "AM-MVC", "Selectivity" to "Normal-Sharp", "Volume" at maximum, "CW Pitch" to zero, Tone switch to "High", Standby-Receive switch to "Receive" and Noise Limiter to "Off". Set bandspread tuning cap. fully open at all times with exception of Bands 5 & 6 where it only is used for tuning.  
Use insulated alignment screwdriver for all adjustments.

## 10.7 MC IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1 Direct	High side to rear stator of center section of bandspread tuning cap.	10.7MC (Unmodulated)	Band "5"	50 on logging scale.	DC probe to Point $\diamond$ Common to ground.	A1, A2, A3, A4, A5, A6, A7	Turn reception switch to "FM" and adjust for maximum deflection.
2 "	"	"	"	"	DC probe to Point $\diamond$ Common to ground.	A8	Adjust for zero deflection. Continue with AM alignment in Step 5.

## 10.7 MC IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal with 60  $\sim$  modulation and 450KC sweep. Use 120  $\sim$  sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1 .05 MFD	High side to Pin 4 (grid) of 6SH7 2nd IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	Band "5"	50 on logging scale.	Vertical input in series with .05 MFD. cap. to Point $\diamond$ Low side to chassis.	A2, A3	Turn reception switch to FM and adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
2 .05 MFD	High side to Pin 4 (grid) of 6SG7. Low side to chassis.	"	"	"	"	A4, A5	"
3 .05 MFD	High side to rear stator of center section of bandspread tuning cap.	"	"	"	"	A6, A7	"
4 .05 MFD	High side to Pin 4 (grid) of 6SH7 2nd IF Tube (4). Low side to chassis.	"	"	"	Vertical input to Point $\diamond$ Ground to chassis.	A1, A8	Alternately adjust A1 for maximum amplitude and A8 for maximum straightness of crossover lines with crossover occurring at center of pattern per Fig. 2. Continue with AM Alignment in Step 5.

## AM IF ALIGNMENT

In Steps 5, 6, 7 and 8 set sig. gen. to exact crystal frequency as follows: Set sig. gen. to approximately 455KC. Turn BFO on and set CW pitch for approximately a 1000  $\sim$  note. Set selectivity control to "Crystal-Sharp" and tune sig. gen. to weakest of the two response frequencies on either side of zero beat. Adjust "Crystal-Phasing" control for minimum audio output. Retune sig. gen. for maximum output on the opposite side of zero beat.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5 Direct	High side to rear stator of center section of tuning cap. Low side to chassis.	455KC (See pre-alignment notes)	Band "4"	50 on logging scale.	Across voice coil	A9, A10, A11, A12, A13	Turn selectivity switch to normal sharp and adjust A9, A10, A11, A12 and A13 for maximum output.
6 Direct	"	"	"	"	"	A14	Turn selectivity switch to "Crystal-Broad". Adjust A14 for maximum output.
7 Direct	"	"	"	"	"	A15	Turn selectivity switch to "Normal-Sharp". Adjust A15 for maximum output.
8 Direct	"	"	"	"	"	A16	Turn reception switch to "CW". Remove CW pitch control knob and adjust A16 for zero beat. Replace knob with zero at index line. Repeat 10.7 MC IF alignment to insure that they have not been detuned in the process of aligning 455KC IF
9 Direct	"	10.7MC	Band "5"	"	"	A17	Adjust for maximum output. Tune sig. gen. to 11.61MC. If signal is not heard retune sig. gen. to 10.7 MC and adjust A17 counterclockwise to next peak. Adjust for maximum output and recheck for image. Reassembly receiver in cabinet.



# VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

## VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	OV.	OV.	6.3VAC	OV.	250VDC	120VDC	8VDC	-
2	7F8	-2VDC§	OV.	180VDC	OV.	.6VDC	65VDC	6.3VAC	-.5VDC
3	6SQ7	OV.	6.3VAC	1.6VDC	OV.	1.6VDC	155VDC	OV.	260VDC
4	6SH7	OV.	6.3VAC	4.6VDC	OV.	4.6VDC	225VDC	OV.	270VDC
5	6SH7†	OV.	OV.	OV.	-.4VDC	OV.	35VDC	6.3VAC	35VDC
6	6AL5†	OV.	OV.	OV.	6.3VAC	.4VDC	OV.	-.4VDC	-
7	6H6	OV.	OV.	OV.	OV.	-.5VDC	OV.	6.3VAC	OV.
8	6J5**	OV.	OV.	160VDC	OV.	-6.4VDC§	OV.	6.3VAC	OV.
9	6SQ7	OV.	-.4VDC	OV.	OV.	OV.	120VDC	OV.	6.3VAC
10	6V6GT	OV.	OV.	280VDC	270VDC	OV.	240VDC	6.3VAC	12.5VDC
11	5Y3GT	OV.	290VDC	OV.	265VAC	OV.	265VAC	OV.	290VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

## RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3.6 Meg.	0Ω	.1Ω	0Ω	20KΩ	15KΩ	78Ω	-
2	7F8	22KΩ	0Ω	30KΩ	0Ω	1KΩ	20KΩ	.1Ω	2.2 Meg.
3	6SQ7	0Ω	.1Ω	92Ω	2.6 Meg.	92Ω	15KΩ	0Ω	24KΩ
4	6SH7	0Ω	.1Ω	690Ω	5Ω	690Ω	50KΩ	0Ω	24KΩ
5	6SH7†	0Ω	0Ω	0Ω	220KΩ	0Ω	120KΩ	.1Ω	120KΩ
6	6AL5†	INF.	INF.	0Ω	.1Ω	100KΩ	0Ω	100KΩ	-
7	6H6	0Ω	0Ω	1.3 Meg.	1.3 Meg.	400KΩ	0Ω	.1Ω	0Ω
8	6J5**	0Ω	0Ω	25KΩ	0Ω	47KΩ	0Ω	.1Ω	4Ω
9	6SQ7	0Ω	15 Meg.	0Ω	0Ω	0Ω	240KΩ	0Ω	.1Ω
10	6V6GT	0Ω	0Ω	20KΩ	21KΩ	470KΩ	20KΩ	.1Ω	260Ω
11	5Y3GT	INF.	20KΩ	INF.	70Ω	INF.	65Ω	INF.	20KΩ

† VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RECEIVE-STANDBY SWITCH IN RECEIVE POSITION.

\*\*TAKEN IN CW POSITION. NOISE LIMITER OFF.

SENSITIVITY CONTROL FULL ON.

SELECTIVITY CONTROL FULL ON.

TONE HIGH.

- 1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
- 2 - Socket connections are shown as bottom views.
- 3 - Measured values are from socket pin to common negative.
- 4 - Line voltage maintained at 117 volts for voltage readings.
- 5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
- 6 - Volume control at maximum, no signal applied for voltage measurements.

## STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	2X	600KC
RF GRID TO CONV. GRID	2X	600KC
CONVERSION GAIN	15X	IN 600KC OUT 455KC
INPUT IF TRANSFORMER	1.5X	455KC
1st IF TUBE	175X	455KC
INTER IF TRANS.	.1X	455KC
2nd IF TUBE	200X	455KC
OUTPUT IF TRANS.	.3X	455KC
AUDIO	35X	400 ~
OUTPUT	28X	400 ~

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.